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Cooperative Principles and the SDGs: An Analytical Framework and Evidence from Regional Development in India

ABSTRACT

This paper examines whether, how, and to what extent cooperative principles can support the achievement of the United Nations Sustainable Development Goals (SDGs). It develops a conceptual framework linking the seven cooperative principles to selected SDG targets, providing an analytical tool to assess cooperatives' contribution to inclusive and sustainable regional development. The framework is applied to village dairy cooperative societies in Gujarat, India—a region widely associated with the “Anand pattern” of dairy cooperation. Drawing on qualitative evidence from 40 structured interviews and eight focus group discussions with cooperative stakeholders, the study analyses how cooperative values, governance structures, and organisational practices translate into SDG-oriented outcomes. The findings reveal that dairy cooperatives contribute to poverty reduction, economic empowerment, social inclusion, technological upgrading, and community welfare. However, challenges persist, including limited participation of women and youth, informal leadership selection, unequal influence among members, rising input costs, and the need for stronger sustainable transitions through renewable energy and resource innovation.

KEY-WORDS

COOPERATIVE, SUSTAINABILITY, SDG, SOCIAL INNOVATION, LOCAL DEVELOPMENT, WOMEN EMPOWERMENT

1. Introduction

Whether, how and why do cooperative principles align with and support the achievement of the United Nations (UN) Sustainable Development Goals (SDGs)? This paper addresses this question by developing a structured framework for assessing the SDG relevance of cooperative principles in practice.

A cooperative is an autonomous association of persons who voluntarily unite to meet their common economic, social, and cultural needs through a jointly owned and democratically controlled enterprise (Fairbairn, 2004; ICA, 2017). The cooperative model is structured around seven principles (Bandyopadhyay, 2004; Novkovic and Power, 2005; ICA, 2017), which preserve members' interests and sustain a distinctive organizational identity, differentiating cooperatives from investor-owned enterprises. These principles are: (i) voluntary and open membership, (ii) democratic member control, (iii) members' economic participation, (iv) autonomy and independence, (v) education, training, and information, (vi) cooperation among cooperatives, and (vii) concern for community. Together, they promote inclusiveness, democratic governance, equitable resource allocation, and a commitment to social and environmental sustainability.

These principles closely resonate with the United Nations SDGs introduced under the Agenda 2030 (UN, 2015). In particular, cooperative principles mirror key SDG priorities such as poverty reduction, gender equality, decent work, and environmental sustainability. This alignment is reflected in the International Cooperative Alliance's emphasis on selected SDGs that are especially relevant to cooperatives, including SDG 1, SDG 2, SDG 5, SDG 8, and SDG 13 (ICA, 2016). The cooperatives that are especially producers and distributors have been playing an effective role in addressing SDGs (Lafont, Saura and Ribeiro-Soriano, 2023). Also, in such cooperatives where the aim is to achieve SDGs, higher business performance has been observed (Mozas-Moral et al., 2021). Consistent with this convergence, cooperatives are widely recognized as effective actors in promoting sustainable development. By fostering a people-centred, solidarity-based economy, they contribute to reducing inequalities, enhancing participation, and supporting social, economic, and environmental goals (ILO, 2018; Utting, 2018; Imaz and Eizagirre, 2020). Moreover, their organizational features (democratic decision-making, inclusiveness, and local embeddedness) enable them to empower marginalized groups, strengthen bargaining power, and facilitate access to markets and resources (Birchall, 2014; Fischer and Qaim, 2014).

However, cooperatives operate in increasingly complex environments shaped by market pressures, institutional change, technological innovation, and evolving governance dynamics. These pressures require cooperatives to adapt while preserving their core values, legitimacy, and member-centred identity. In this context, the SDGs provide a useful framework for guiding and assessing cooperative action. This study therefore develops an analytical framework linking cooperative principles to relevant SDG targets and indicators, offering a structured tool to evaluate cooperatives' contribution to sustainable development.

To examine how and to what extent cooperative principles can serve as a foundation for achieving the SDGs, the study adopts a qualitative case study approach focused on dairy cooperatives in Anand district, Gujarat, India. The empirical analysis draws on 40 structured interviews with cooperative members and eight focus group discussions.

The findings indicate that dairy cooperatives in Anand district display broad alignment with SDG objectives. However, this alignment is uneven and contingent. Cooperatives are undergoing significant transformation, shaped by internal dynamics (such as changing patterns of social capital and governance) and external pressures, including market competition, demographic shifts, technological change, and regulatory interventions. These interacting forces generate structural tensions that may challenge the long-term sustainability of the cooperative model.

The remainder of the paper is organised as follows. Section 2 presents the dairy cooperative system in Gujarat. Section 3 develops the conceptual framework linking cooperative principles to the SDGs. Section 4 outlines the qualitative methodology. Section 5 presents the findings. Section 6 discusses the results in relation to cooperative governance and sustainable development. Section 7 concludes by identifying implications for cooperative policy, member participation, social inclusion, women's empowerment, social innovation, and sustainable resource allocation.

2. Dairy cooperatives in Gujarat

The cooperative movement in India originated under British colonial rule with the Cooperative Credit Societies Act of 1904 (Bandyopadhyay, 2004). However, the development of a system comparable to the British model proved difficult, as cooperatives were often dominated by wealthy landowners and moneylenders (Shah, Rao and Shankar, 2007). Following independence in 1947, cooperatives were reoriented towards broader socio-economic objectives, particularly the protection and empowerment of disadvantaged farming groups and the promotion of social equity. Thus, while their initial colonial purpose was to improve agricultural efficiency, cooperatives subsequently evolved into key institutions contributing to India's socio-economic development, especially by safeguarding farmers' rights and fostering unity among smallholders.

Within this broader context, dairy cooperatives have emerged as a particularly successful model. As BIRTHAL and JOSHI (2009) observe, their effectiveness rests on internal cohesion, competitive dynamics, and sustained state support. These organisations illustrate how collective action and local institution-building, supported by robust governance structures, can strengthen farmers' agency and voice. Their resilience was also demonstrated during the COVID-19 pandemic, when cooperatives maintained operations and social cohesion (Billiet et al., 2021). Moreover, the creation of a dedicated Ministry of Cooperation has renewed policy attention to the cooperative model in India (Government of India, 2021).

Gujarat provides a compelling case for examining dairy cooperatives, both in terms of governance and their contribution to the SDGs. It was selected as the empirical setting for this study for several reasons. First, Gujarat hosts one of India's oldest dairy cooperatives, established in 1946 (Morais,

Dash and Bacic, 2017), and is widely recognised as a pioneering site of the White Revolution. Second, the district economy remains strongly anchored in agriculture and dairying, with 59.04% of the workforce engaged in agriculture and allied activities (Office of the Registrar General and Census Commissioner, 2011). These features make Anand an especially relevant case for examining the historical evolution and contemporary institutional dynamics of dairy cooperatives. Moreover, Gujarat is today one of India's leading milk-producing states. Its cooperative model has successfully mobilised large numbers of farmers into organised village societies, enabling efficient dairy production and marketing. The interaction between farmer-producers and professional managers has supported the development of strong cooperative brands and contributed significantly to India's position as one of the world's largest milk producers.

Gujarat currently hosts 18,565 village dairy cooperative societies, with approximately 3.6 million producer-members. These cooperatives collectively procure around 30 million litres of milk per day (Kaira General Board, 2021). Over nearly eight decades, the network has expanded substantially; for example, between 2003 and 2013, milk procurement increased by 55.42%, from 41.42 to 64.38 million kilograms (Prasad and Satsangi, 2013).

Membership in the cooperative is open to milk producers who meet specific criteria, including the purchase of a share and a commitment to supply milk exclusively to the society. Milk is tested for fat content and remunerated accordingly, ensuring quality-based pricing. At the village level, milk is collected and transferred to district unions, where it is processed, pasteurised, packaged, and transformed into dairy products. The state federation then coordinates marketing under a unified brand, strengthening market integration.

The cooperative system is organised according to a distinctive three-tier structure, commonly known as the "Anand pattern". At its foundation lies the Village Dairy Cooperative Society, governed by a board of eleven milk producers. These village-level societies represent the primary interface with farmers. Their elected chairpersons represent them at the district-level dairy cooperative unions, which constitute the second tier. At the apex, each district union is represented within the state federation by an elected chairperson. Across all tiers, the system combines farmer representation with professional management. This integrated structure forms the core of the Anand pattern. Milk flows upwards from village societies to district unions and then to the state federation, while governance and representation flow in the opposite direction, supporting accountability and participation.

Beyond these three tiers, a fourth level operates nationally through the National Cooperative Dairy Federation of India, which formulates policies and programmes to protect producers' interests. Across all levels, strong inter-organisational linkages reinforce coherence and coordination within the system (Rajendran and Mohanty, 2004).

3. Conceptual framework

Social scientists have conceptualised cooperatives as member-controlled organisations in which individuals actively participate in decision-making processes (Österberg and Nilsson, 2009; Landherr, Friedl, and Heidemann, 2010), as well as network-based entities in which collective action represents the core mechanism of intervention (Mojo, Fischer and Degefa, 2016). The cooperative model is grounded in values such as self-help, self-responsibility, democracy, equality, equity, and solidarity, as well as ethical principles including honesty, openness, social responsibility, and care for others (ICA, 1995; 2025; Bastias, 2013). These values are operationalised through the seven cooperative principles:

1. Voluntary and open membership, meaning that membership is open to all individuals without discrimination based on gender, race, social status, political affiliation, or religion.
2. Democratic member control, whereby members actively and democratically participate in the cooperative's decision-making processes.
3. Members' economic participation, implying that members contribute equitably to, and democratically control, the cooperative's capital.
4. Autonomy and independence, indicating that the cooperative remains self-governing and under the control of its members.
5. Education, training, and information, ensuring that members receive the knowledge and skills necessary to participate effectively in the cooperative.
6. Cooperation among cooperatives, whereby cooperatives collaborate with one another to strengthen the broader cooperative movement.
7. Concern for community, meaning that cooperatives actively promote the sustainable development of their communities, including social and environmental well-being.

Together, these principles form the institutional and cultural foundation of cooperative organisations and make cooperatives particularly relevant to the SDGs. By fostering a social and solidarity economy, cooperatives contribute directly and indirectly to sustainable development (Imaz and Eizagirre, 2020). Their people-centred orientation aligns with the objectives of reducing inequality and promoting balanced economic, social, and environmental development (UN, 2015; 2018; Utting, 2018). Moreover, cooperatives act as agents of change by providing formal communication channels, enabling democratic decision-making, improving market access, and influencing policy processes. Finally, they have proven effective in enhancing farmers' bargaining power, increasing visibility, and promoting women's inclusion and voice (Birchall, 2014; Fischer and Qaim, 2014).

Despite these strengths, cooperatives operate in rapidly evolving socio-economic environments. Market pressures, changing industry standards, urbanisation, and rising educational aspirations are reshaping rural livelihoods and may place increasing strain on cooperative principles. Cooperatives

must therefore continually assess their organisational practices and sources of legitimacy, ensuring that processes of adaptation do not erode their foundational values. The SDGs offer a useful reference framework for guiding this reflective process. Moreover, while existing research suggests that legitimacy, sustained by robust institutional structures, is essential for balancing competitiveness with social objectives (Glover et al., 2014), in the Indian context, cooperatives face additional pressures arising from bureaucratic arrangements, shifting governance patterns, leadership dynamics, and market-oriented strategies (Scott, 2013). To remain effective, they may need to revisit their cooperative ethos and adapt strategically while continuing to pursue sustainable development outcomes.

The United Nations' designation of 2025 as the International Year of Cooperatives reinforces the recognition of cooperatives as key actors in achieving the SDGs (ICA, 2025). With over 2.5 million enterprises and 1.5 billion members worldwide, cooperatives represent a significant institutional force for inclusive economic development (ICA, 2016). Building on this premise, this study systematically compares cooperative principles with SDG targets to identify areas of conceptual and practical alignment.

The resulting framework (Table 1) integrates the seven cooperative principles, their key attributes, and selected SDG goals and indicators that overlap conceptually and operationally (UN, 2018)¹. For example, the first cooperative principle, i.e., voluntary and open membership, emphasises non-discriminatory access to cooperative services. This principle aligns closely with SDG 8, Target 8.5, which promotes productive employment and equal pay, and SDG 10, Target 10.2, which calls for the social, economic, and political inclusion of all individuals. Such correspondences demonstrate the conceptual and practical convergence between cooperative principles and the SDG framework.

¹ SDGs include the eradication of poverty (SDG 1) and hunger (SDG 2), as well as the promotion of good health and well-being (SDG 3) and access to quality education (SDG 4). Particular attention is also given to advancing gender equality (SDG 5) and ensuring access to clean water and sanitation (SDG 6), alongside the promotion of affordable and clean energy (SDG 7). In addition, the SDGs' framework addresses economic dimensions such as decent work and sustained economic growth (SDG 8), as well as industrial development, innovation, and infrastructure (SDG 9). It further considers the reduction of inequalities (SDG 10) and the importance of responsible consumption and production patterns (SDG 12). Environmental sustainability is captured through climate action (SDG 13) and the protection of terrestrial ecosystems (SDG 15). Finally, the analysis incorporates institutional and governance dimensions, including the promotion of peace, justice, and strong institutions (SDG 16), as well as the role of partnerships in achieving sustainable development (SDG 17). Together, these goals provide a comprehensive basis for assessing cooperatives' contribution to inclusive and sustainable development.

Table 1. Cooperative principles, SDGs indicators, and analytical parameters

Cooperative principles and attributes	Alignment with the UN 2030 Agenda for SDG (goals and targets)	Analytical parameters
<i>1. Open and voluntary membership</i>		
1A. Operate as organizations that encourage open and voluntary participation. 1B. Provide services to all members without discrimination based on gender, social status, ethnicity, political affiliation, or religion.	SDG 8 (Target 8.5); SDG 10 (Target 10.2).	<i>Parameter 1: Equitable and inclusive empowerment</i> Ensures equal opportunities and decent work for all individuals, regardless of genders and social background, while fostering social, economic and political empowerment.
<i>2. Democratic member control</i>		
2A. Ensure equal opportunities for members to participate in decision-making processes. 2B. Guarantee equal voting rights and promote accountability. 2C. Ensure that the distribution of returns is transparent and reflects democratic governance and members' participation.	SDG 1 (Target 1.b); SDG 5 (Target 5.5); SDG 10 (Target 10.6).	<i>Parameter 2: Participatory leadership</i> Promotes inclusive participation in decision-making and supports leadership development across all social groups, while creating space for local leadership.
<i>3. Member's economic participation</i>		
3A. Provide equal opportunity for all members to contribute to and strengthen the cooperative's economic performance. 3B. Ensure fair and equitable access to economic benefits generated by the cooperative.	SDG 1 (Targets 1.a, 1.4); SDG 2 (Target 2.3); SDG 5 (Target 5); SDG 8 (Target 8.2); SDG 10; SDG 17 (Target 17.11).	<i>Parameter 3: Resource management and advancement</i> Focuses on the equitable mobilization and utilization of resources, fostering a sense of ownership, recognising unpaid contributions, and promoting technological advancement, market access, effective value chain management, and global competitiveness.
<i>4. Autonomy and independence</i>		
4A. Maintain independence in decision-making processes. 4B. Ensure that the cooperative is controlled solely by its members. 4C. Safeguard that all key decisions are made by members.	SDG 16 (Targets 16.7, 16.10).	<i>Parameter 4: Organizational integrity</i> Emphasizes organizational legitimacy, accountability, transparency, and alignment with sustainable development objectives.
<i>5. Education, training, and information</i>		
5A. Empower members through training and knowledge-sharing activities (e.g., role clarity and skill development). 5B. Facilitate effective and transparent information exchange.	SDG 2 (Target 2.c); SDG 4 (Target 4.4.); SDG 8 (Targets 8.2., 8.10); SDG 9 (Target 9.3); SDG 15 (Target 15.6).	<i>Parameter 5: Economic empowerment</i> Enhances bargaining power and entrepreneurial opportunities, while promoting quality standards, ethical practices, capacity building, and broader economic and technological advancement.
<i>6. Cooperation among cooperatives</i>		
6A. Develop and participate in cooperative networks. 6B. Collaborate effectively with other cooperatives at local, national, and international levels. 6C. Promote the cooperative model and support the development of other cooperative enterprises.	SDG 6 (Targets 6.a, 6.5); SDG 8 (Target 8.3); SDG 9 (Target 9.1); SDG 16 (Target 16.a).	<i>Parameter 6: A just and inclusive society</i> Advances safety, security, and inclusivity, while supporting sustainable transitions and environmental protection.
<i>7. Concern for the community</i>		
7A. Promote community empowerment through a holistic approach. 7B. Identify and respond to community needs through cooperative initiatives. 7C. Mobilise resources to support community development. 7D. Contribute to the sustainable development of the community.	SDG 2 (Targets 2.4., 2.a); SDG 3 (Target 3.8); SDG 4 (Target 4.7); SDG 6 (Target 6.b); SDG 7 (Target 7.2); SDG 8 (Target 8.6); SDG 9 (Target 9.2); SDG 12 (Target 12.5); SDG 13 (Target 13.2).	<i>Parameter 7: Sustainable future</i> Supports livelihoods, access to healthcare, and the adoption of renewable energy, while promoting small enterprises, sustainable value chain transitions, and adherence to advanced quality standards.

Source: Authors' own elaboration.

The framework in Table 1 is operationalised through seven analytical parameters. The first parameter focuses on equitable and inclusive empowerment, examining the extent to which cooperatives ensure open and fair access to membership, promote participation among women, youth, and marginalised groups, and address potential barriers to inclusion. It also considers how trust, social ties, and member behaviour shape participation within the cooperative network. The second parameter addresses participatory leadership, exploring the formal and informal mechanisms, governing board formation, leadership selection, and decision-making processes. Particular attention is given to the inclusiveness, transparency, and decentralisation of governance, as well as to the challenges related to role clarity and effective leadership. The third parameter concerns resource management and advancement, analysing how cooperatives mobilise, allocate, and monitor financial, human, and technical resources. It also evaluates access to capacity-building initiatives and modern technologies, as well as the extent to which resources are distributed equitably among members. The fourth parameter focuses on organisational integrity, including the role of formal rules and informal norms in regulating behaviour, as well as the cooperative's ability to ensure transparency, accountability, and autonomy. It also examines how cooperatives evolve over time and how members perceive their performance and credibility. The fifth parameter relates to economic empowerment, assessing the extent to which cooperatives contribute to income generation, livelihood improvement, and economic stability. It further considers members' satisfaction with financial returns, as well as the availability of opportunities for entrepreneurship, access to credit, and income diversification. The sixth parameter captures the cooperative's role in fostering a just and inclusive society, evaluating its contributions to social, political, and financial inclusion, as well as to environmental sustainability and community development. Finally, the seventh parameter addresses the capacity of cooperatives to build a sustainable future, focusing on value chain management, quality standards, innovation, and long-term sustainability strategies, alongside their contribution to members' well-being and social services.

Together, these parameters provide a comprehensive framework for analysing how cooperatives operate as agents of sustainable and inclusive development. These parameters guide the empirical analysis by linking cooperative principles to observable governance practices, member participation, economic inclusion, and community impact. However, considering the argument by Jan Kraak, Ricker, and Engelhardt (2018), the selected UN SDGs targets still have scope to enable effective empowerment by the cooperatives, as they encompass a wide range of indicators.

4. Data and empirical methodology

The study adopts a qualitative case study design based on structured interviews and focus group discussions (Creswell, 2009). A pattern-recognition approach is used to interpret the data and examine how actors understand and construct the realities in which they operate (Candeloro and Tartari, 2025). Secondary data were collected from publicly available sources, including annual reports and official

publications from the National Cooperative Union of India, the Planning Commission, the National Dairy Development Board, and the International Farm Comparison Network.

Administratively, Anand district comprises eight blocks and 365 villages (National Informatic Centre, 2018). This study focuses on five selected blocks, chosen according to the period of cooperative registration, board composition, milk procurement capacity, and geographical location. Primary data were collected through 40 structured interviews with cooperative stakeholders, including chairpersons, secretaries, active members, and passive members, as well as through eight focus group discussions.

Table 2. Interview guide

Parameters	Related questions
Parameter 1: Equitable and inclusive empowerment	<ul style="list-style-type: none"> • What are the criteria and procedures for becoming a cooperative member, and what challenges are associated with this process? • How has the cooperative evolved over time? What policies exist to promote the inclusion of women, youth, and marginalised social groups? How do member behaviour, trust, and social ties shape the cooperative network, and what challenges emerge in this context?
Parameter 2: Participatory leadership	<ul style="list-style-type: none"> • What procedures govern the formation of the governing board? How are the chairperson and secretary selected? • What policies support the participation of marginalised social groups in leadership and decision-making processes? How clearly are leadership roles defined, and what challenges arise in ensuring role clarity? • To what extent is governance decentralised within the cooperative board?
Parameter 3: Resource management and advancement	<ul style="list-style-type: none"> • How are resources mobilised and utilised, particularly with respect to capacity-building programmes? • What is the level of access to modern technologies, and what challenges are associated with their adoption?
Parameter 4: Organizational integrity	<ul style="list-style-type: none"> • To what extent are members satisfied with cooperative performance, and what are the main challenges? • What codes of conduct govern members' behaviour, and what challenges arise in their implementation?
Parameter 5: Economic empowerment	<ul style="list-style-type: none"> • To what extent do members experience economic growth, and how satisfied are they with financial returns? What challenges persist?
Parameter 6: A just and inclusive society	<ul style="list-style-type: none"> • How does the cooperative promote social, political, and financial inclusion, as well as environmentally sustainable practices?
Parameter 7: Sustainable future	<ul style="list-style-type: none"> • What standards are applied to value chain management and quality control? • What interventions support innovation and sustainable transitions? What benefits are provided to member communities, including healthcare services?

Source: Authors' own elaboration.

All participants were informed about the objectives of the study and provided informed consent prior to participation. A pilot interview was conducted to refine the interview protocol. The interviews covered participants' socio-economic background, involvement in cooperative activities,

perceived benefits, achievements and challenges, gender roles, the political environment, quality control practices, livelihood alternatives, and waste management in dairying.

The analytical framework is structured around seven key parameters (cf. Table 1), each associated with guiding questions aimed at assessing cooperatives' capacity to contribute to inclusive and sustainable development. Table 2 summarises the main themes of the interview guide.

5. Findings

This section presents the findings according to the analytical framework outlined in Tables 1 and 2. Interview data were synthesised and organised around the seven parameters identified above.

- Parameter 1: equitable and inclusive empowerment

Dairy cooperatives in Anand have contributed to the economic empowerment of farmer milk producers. Although membership is formally open, eligibility criteria linked to regular milk supply apply. In practice, members with larger landholdings, greater livestock assets, and higher social status tend to exercise greater influence. Membership is often intergenerational, though continuity among younger cohorts remains uncertain:

"In most cases, membership is passed from one generation to another... However, I am not sure if my children are interested in this business." (Secretary #6)

Moreover, participation in general board meetings remains limited, and the representation of scheduled castes, scheduled tribes, and women is often inadequate despite legal provisions. In some cooperatives, leadership remains concentrated within specific social groups.

- Parameter 2: participatory leadership

Governance is typically centred on the chairperson, supported by the secretary. In homogeneous contexts, board members are often selected through majority-based processes, which may limit responsiveness to diverse member needs. In more heterogeneous settings, elections or lottery systems are used, although these mechanisms do not always ensure effective representation. A lack of role clarity and decentralisation constrains accountability:

"Everybody takes care of everything... which results in nobody taking care of anything." (Secretary #6)

Women's and youth participation in decision-making remains limited. Leadership tends to be associated with individuals who possess economic resources, social standing, and ties to local governance institutions, such as the Gram Panchayat. Generational differences are also evident: younger members tend to adopt a more business-oriented approach, while senior members emphasise social responsibility and empathy towards producers.

- Parameter 3: resource management and advancement

Cooperatives have adopted advanced technologies and achieved international standards, including ISO certifications and APEDA accreditation, facilitating access to global markets. Digital

tools have improved transparency in milk collection, payments, and service access. Cooperatives have also developed effective value chains linking producers to markets.

Resource mobilisation varies across cooperatives and often depends on leadership quality. Cooperatives have also engaged in policy advocacy, particularly in relation to trade agreements affecting the dairy sector. However, implementation gaps persist, especially in the allocation of subsidised schemes, indicating the need for stronger oversight. Members also emphasised the need for professional capacity building and improved financial support, particularly for small and young producers.

- Parameter 4: organisational integrity

Economically stronger cooperatives exhibit higher levels of organisational legitimacy, while weaker cooperatives face challenges related to accountability, transparency, and member control. Strengthened monitoring mechanisms are needed to improve governance quality and reduce opportunistic behaviour.

Training initiatives and the limited adoption of renewable energy technologies, such as biogas and solar energy, indicate initial movement towards sustainability. However, these initiatives remain fragmented. Rising input costs, particularly for feed and livestock care, have reduced profitability, underscoring the need for innovation, including the use of animal waste for energy generation.

- Parameter 5: economic empowerment

Technological innovation has improved financial transparency and information sharing. Nonetheless, small-scale producers express dissatisfaction with milk prices and the increasing labour intensity of dairying.

“Producers trust the cooperative... however, they expect better prices.” (Chairperson #3 and Auditor #3)

Cooperatives provide platforms for knowledge sharing and publish annual reports detailing financial and operational performance.

“Decisions should always prioritise members’ interests.” (Board of Directors #2)

Although some cooperatives have facilitated access to credit through partnerships with local banks, many have discontinued these services due to loan recovery challenges. Demand for accessible finance remains high.

- Parameter 6: a just and inclusive society

Cooperatives contribute to members’ socio-economic security and provide relatively stable institutional platforms. However, further progress is needed in social inclusion, decentralised governance, and sustainable resource utilisation. Collaboration with local institutions exists but remains limited, indicating the need for stronger multi-stakeholder engagement.

- Parameter 7: sustainable futures

Some cooperatives have initiated healthcare interventions through community outreach programmes. However, broader engagement of younger members through innovation and entrepreneurship remains limited. More effective and accountable credit systems are needed, together with stronger financial partnerships to support investment in improved livestock and productivity.

Significant potential remains for scaling community-based renewable energy initiatives, suggesting an underexploited pathway for sustainable transition.

6. Discussion

The United Nations' designation of 2025 as the International Year of Cooperatives reinforces the growing recognition of cooperatives as institutional actors in sustainable development and in the advancement of the SDGs. This study contributes to this debate by developing and empirically applying a conceptual framework that systematically links cooperative principles to the SDG architecture. The framework identifies analytically grounded parameters through which cooperatives operationalise sustainability objectives in practice. In doing so, the analysis moves beyond normative claims and provides an empirically informed assessment of how and to what extent cooperatives contribute to sustainable development.

The findings show that Gujarat's dairy cooperatives exhibit a substantial—yet uneven—alignment with the SDGs. This evidence substantiates the claim advanced by Griggs et al. (2013) that the SDGs can function as a governance framework for more accountable and inclusive development processes. At the same time, the analysis demonstrates that alignment is neither automatic nor stable, but contingent upon organisational practices, governance structures, and broader institutional conditions.

Parameter 1 (equitable and inclusive empowerment) captures the extent to which cooperatives ensure voluntary and open membership, particularly for women and youth, thereby promoting decent work and inclusive participation. Historically, dairy cooperatives in Gujarat emerged from collective action aimed at improving producers' livelihoods and have generated significant socio-economic gains. However, increasing social heterogeneity among members is now reshaping participation dynamics and placing pressure on traditional governance arrangements. This shift necessitates institutional innovation to preserve inclusiveness under changing socio-economic conditions.

Parameter 2 (participatory leadership) concerns democratic governance and leadership formation. The evidence points to a structural tension between formal democratic principles and actual governance practices. Membership is frequently inherited, younger cohorts are progressively disengaging from dairying, and large producers are increasingly bypassing cooperative structures. Moreover, the persistence of informal "selection" mechanisms in board formation undermines electoral accountability and constrains leadership renewal. These dynamics weaken the substantive quality of democratic participation. Addressing them requires not only formal inclusion policies but also a reconfiguration of governance practices to enable meaningful participation of women, scheduled castes, and scheduled tribes, as well as the systematic recognition of women's unpaid labour. Leadership emerges as a central organisational capability: without targeted investments in leadership development, democratic governance risks becoming procedural rather than substantive.

Parameter 3 (resource management and advancement) highlights resource mobilisation and allocation. Gujarat's dairy cooperatives demonstrate strong capacity in integrating heterogeneous producers into coordinated value chains, thereby ensuring market access and income stability. However, this strength coexists with significant gaps in micro-level accountability. Weak monitoring and evaluation mechanisms limit members' capacity to exercise effective control over resource allocation. Strengthening these mechanisms, alongside deeper collaboration with local institutions, is necessary to sustain both efficiency and legitimacy, particularly in areas such as animal health, financial inclusion, and renewable energy adoption.

Parameter 4 addresses organisational integrity, encompassing autonomy, transparency, and accountability. The findings confirm that cooperatives operate under persistent pressures from both state and market actors. While these pressures do not necessarily erode cooperative autonomy, they require robust governance structures to be effectively managed. In line with Fairbairn (2004) and Bastias (2013), the analysis confirms that cooperatives maintain a distinct organisational logic centred on member welfare rather than profit maximisation. However, this distinctiveness is institutionally fragile and must be actively sustained.

Parameter 5 focuses on economic empowerment and capability development. Cooperatives in Anand provide tangible economic benefits through collective bargaining, subsidised inputs, and welfare schemes, while also supporting diversification through renewable energy and credit access. Nonetheless, existing financial instruments remain insufficient to support sustained entrepreneurial activity, particularly for smaller members. This limits the transformative potential of cooperatives as platforms for inclusive economic development.

Parameter 6 (a just and inclusive society) emphasises inter-organisational collaboration and societal embeddedness. The evidence shows that cooperatives contribute to local development not only through economic activities but also through network-building and social coordination. However, limited transparency and weak communication mechanisms constrain members' awareness and reduce accountability. Strengthening internal communication and external partnerships is therefore critical to enhancing the societal impact of cooperatives.

Parameter 7 (sustainable futures) captures the capacity of cooperatives to build sustainable futures through integrated value chains, quality assurance, and welfare provision. Gujarat's dairy cooperatives have achieved internationally recognised standards and technological sophistication. Yet, increasing exposure to competitive markets generates pressures that risk displacing cooperative principles. Consistent with the literature on hybrid organisations (Dacin Goodstein and Scott, 2002; Buller and Morris, 2004; Morris, 2015), the findings point to a concrete risk of mission drift when market logics become dominant.

Taken together, the results demonstrate that cooperatives constitute institutional arrangements capable of advancing the SDGs, but only under conditions of sustained organisational adaptation. Their contribution is neither inherent nor guaranteed; it depends on the continuous alignment between cooperative principles and evolving socio-economic environments.

7. Conclusion

This paper argues that cooperative principles and the UN SDGs share a common normative foundation centred on inclusive, secure, and sustainable socio-economic development. Building on this convergence, it develops an analytical framework that links cooperative organisational features to the implementation of specific SDGs.

The empirical analysis of dairy cooperatives in Anand district reveals a substantial alignment with SDG objectives, while also highlighting structural tensions that challenge the long-term sustainability of the cooperative model. These tensions arise from the interaction between internal transformations (such as changing membership structures and governance practices) and external pressures, including market competition, technological change, and state intervention.

The findings identify four critical areas requiring intervention. First, sustainability transitions must be accelerated through cost reduction, income diversification, and the adoption of digital and renewable energy technologies. These investments are not ancillary but central to maintaining both economic viability and environmental sustainability. Second, strengthening women's participation requires more than formal inclusion; it demands substantive institutional change. This includes redesigning organisational practices, challenging entrenched social norms, and embedding gender-sensitive governance mechanisms. Similarly, engaging youth and marginalised groups requires a reconfiguration of ownership structures and decision-making processes to enhance their effective participation. Third, cooperatives' role as engines of local development depends on preserving strong member control and ensuring equitable benefit distribution. Without these conditions, their distinct organisational advantage over investor-owned firms is eroded. Fourth, the evolving policy landscape—despite recent supportive developments—remains insufficient to fully sustain cooperative ecosystems. Stronger inter-cooperative coordination and collective advocacy are necessary to secure institutional environments that protect autonomy and reinforce cooperative identity.

More broadly, this paper contributes to bridging the gap between normative development frameworks and organisational analysis by demonstrating how cooperative structures can operationalise SDG commitments. The proposed framework not only advances the analytical understanding of cooperatives' role in sustainable development but also provides a basis for systematic comparison across sectors and institutional contexts. Future research should build on this approach to test its external validity and refine its theoretical scope.

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